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REMARKS

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Applicant asserts that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

Status of Claims

Claims 1-31 are pending in the application. Claims 1-31 have been rejected. Claims 18 and 19 have been voluntarily amended.

Applicant respectfully asserts that the amendments to the claims add no new matter.

CLAIM REJECTIONS

35 U.S.C. § 103 Rejections

In the Office Action, the Examiner rejected claims 1-13, 16-17 and 19-29 under 35 U.S.C. § 103(a), as being unpatentable over Wan (US 5,978,489) in view of Wright (US 2003/0103635 A1). Applicant respectfully traverses the rejection of claims as being unpatentable over Wan (US 5,978,489) in view of Wright (US 2003/0103635 A1) because a prima facie case of obviousness has not been established. Applicant respectfully asserts that the Examiner has failed to show any substantive motivation or suggestion to combine the cited references. Furthermore, even if the Examiner had shown motivation to combine the cited references, **the combination would have neither taught nor suggested all the limitations recited in independent claim 1.** More specifically, both cited references fail to teach the limitations of “...an estimator to produce a predicted noise signal by applying an estimation function to said noise signal; and an acoustic transducer to produce a noise destructive pattern based on said predicted noise signal.”

More specifically, independent claim 1 recites:

1. "An active noise control system for controlling noise produced by a noise source, said system comprising: an acoustic sensor to sense a noise pattern and to produce a noise signal corresponding to the sensed noise pattern; **an estimator to produce a predicted noise signal by applying an estimation function to said noise signal; and an acoustic transducer to produce a noise destructive pattern based on said predicted noise signal."**

Whereas, the primary cited reference generally teaches:

"A multi-actuator system for active sound and vibration cancellation utilizes an LMS type algorithm having an adaptive filter. However, the error signal rather than the input is filtered through an adjoint filter of the error channel to drive an adaptive filter which in turn drives, for example, a loudspeaker to provide destructive interference for noise cancellation. The adjoint filter is realized by converting a standard filter's flow direction, such as a finite impulse response filter, swapping branching points with summing junctions and unit delays with unit advances. For multiple-input-output systems, computational complexity is significantly reduced." (Wan Abstract)

And the secondary cited reference generally teaches:

"A system (100) for controlling noise comprises an array (2) of cancelling transducers (loudspeakers) (2a). Located some distance away from cancelling array (2) is a detection system (3) comprising a series of microphones (3a), the system casting an acoustic "shadow" or quiet region (4). Located on or adjacent the primary source (1) emitting the noise to be controlled is a synchronising sensor (5) which may be a microphone, vibration transducer or electrical transducer, the output of sensor (5) being fed, along with the output from detection array (3), into an adaptive control system (102) the output of which is fed back to the cancelling units (2). The adaptive control system (102) comprises a low pass filter (15) producing a dc component V from a mathematical convolver (multiplier) (14), and a digital oscillator (16) which generates the cancelling frequency which is controlled by V. Also included are frequency multipliers (17, 18 and 19) which multiply (2, 3) and n times respectively." (Wright Abstract)

In view of the above excerpts from the present Application and the cited references, Applicant respectfully asserts that the Examiner failed to show a suggestion or motivation to combine the teachings of the cited references at the time of the invention. As admitted in the Office Action by the Examiner, the Wan reference fails to teach “...**an estimator to produce a predicted noise signal by applying an estimation function to said noise signal; and to produce a noise destructive pattern based on said predicted noise signal...**”. The Examiner attempted to cure this deficiency by introducing the Wright reference, which allegedly teaches the above stated limitations. However, after careful review of the cited references, especially the Wright reference, Applicant respectfully asserts that the Examiner has misinterpreted their teachings and has erroneously inferred subject matter that is neither taught nor suggested therein. More specifically, contrary to what is recited in pending independent claim 1, the secondary reference teaches “...the invention may also be applied to control **predictable (periodic) multi-frequency noise**...Returning to complex noise (**unpredictable noise**), for example speech, music, and rapidly varying periodic noise and aperiodic impulsive noise. **In this case the frequency domain concept is no longer very useful.** It is more appropriate to consider the time domain alignment of the inverted secondary cancelling time history with the primary time history to be cancelled at the detector microphone.” (*paragraphs* [0038] and [0040]). As shown, the cited reference actually teaches away from the limitation of “...**an estimator to produce a predicted noise signal by applying an estimation function to said noise signal;**”, by teaching a method for producing a cancelling noise signal based on a noise signal **already detected**.

Moreover, the use of the term “**predictable noise**” in the teachings of the Wright reference refers to **cyclical noise**, whereas, the term “**predicted noise**” as it is recited in the pending claims, refers to predicting how the noise will sound at different **distances**. Applicant respectfully asserts that the Examiner has confused the teachings of the Wright reference with the recited limitations of the pending claims based on a mismatching of the term “predictable” in the cited reference and “predicted” within the pending application and claims, even though the meanings of the terms are fundamentally distinct.

Applicant respectfully asserts that an adequate reading of the cited references would lead anyone of ordinary skill in the art to the conclusion that the cited references are

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insufficient for establishing a prima facie case of obviousness, and are accordingly insufficient as relevant prior art.

Accordingly, Applicant respectfully asserts that independent claim 1 is allowable under 35 U.S.C. § 103, as are dependent claims 2-13 and 16-17, by virtue of their dependence on allowable base claims. In addition, claims 19-29 include the limitation of **a primary estimator to produce a predicted noise signal by applying an estimation function to said noise signal**, which as shown above, is neither taught nor suggested in the cited references. Accordingly, Applicant respectfully asserts that claims 19-29 are allowable under 35 U.S.C. § 103, in light of the aforementioned arguments regarding the rejection of independent claim 1.

In addition, the Examiner rejected claims 14-15 under 35 U.S.C. § 103(a), as being unpatentable over Wan (US 5,978,489) in view of Wright (US 2003/0103635 A1) and further in view of Wang (US 5,812,973). Applicant respectfully traverses these rejections. In light of the foregoing remarks regarding the 103 rejections of independent claim 1, Applicant respectfully asserts that claims 14-15 are allowable under 35 U.S.C. § 103 by virtue of their dependence on allowable base claim 1.

35 U.S.C. § 102 Rejections

In the Office Action, the Examiner rejected claims 18 and 30-31 under 35 U.S.C. § 102(b), as being anticipated by Wan (US 5,978,489). Applicant respectfully traverses the rejection of claims as being unpatentable over Wan (US 5,978,489) because a prima facie case of anticipation has not been established. Applicant respectfully asserts that the cited reference fails to teach or suggest all claim limitations of independent claim 18, as filed. However, in the interest of expediting the prosecution of the pending Application, Applicant has voluntarily amended independent claim 18 to include the limitations of “...**a primary estimator to produce a predicted noise signal**, wherein said controller is adapted to produce a noise destructive pattern based on said primary noise signal and said at least one secondary noise signal **and said predicted noise signal**.”. Accordingly, Applicant respectfully asserts that independent claim 18 and all claims dependent upon it are considered allowable under 35

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U.S.C. § 102 in view of the Wan reference, in light of the aforementioned arguments regarding the 103 rejection of independent claim 1.

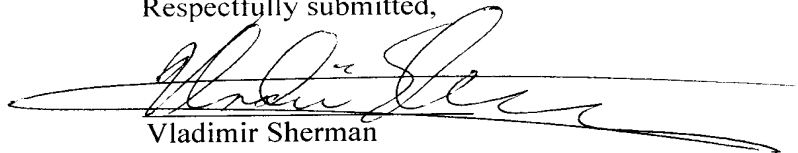
Applicant respectfully requests reconsideration and withdrawal of the rejections of independent claim 18, and of all claims dependent upon it.

In view of the foregoing amendments and remarks, all the pending claims are considered to be allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

Please charge any fees associated with this paper to deposit account No. 50-3400.

Respectfully submitted,



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